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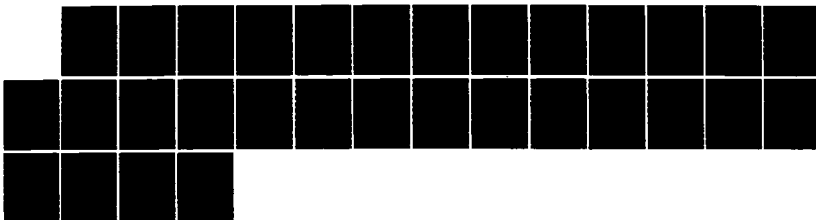
ANTHROPOMETRIC COMPARISON - USA AND USSR(U) REPORT
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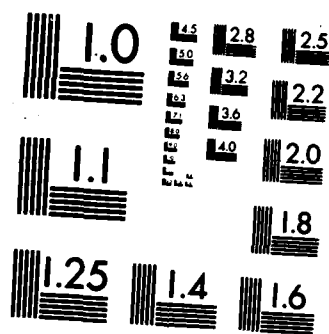
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ANTHROPOMETRIC COMPARISON
USA -- USSR

Prepared for
Foreign Science and Technology Center
U.S. Army Human Engineering Laboratory

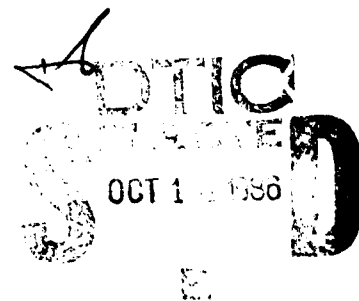
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ANTHROPOMETRIC COMPARISON

USA -- USSR

Prepared for

Foreign Science and Technology Center
U.S. Army Human Engineering Laboratory

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Contract No. DAAL02-86-P-4734

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C O N T E N T S

SUMMARY

Discussion of format	1
Differences in measurements	1
Comments on the US/USSR anthropometric dimensions comparison	2

COMPARATIVE DIMENSIONS AND ILLUSTRATIONS

Standing dimensions	4-5
Seated dimensions	6-7
Circumferences and surface dimensions	8-9
Head and face dimensions	10-15
Anthropometric data for workspaces	16-21

CROSS-REFERENCE TABLE	23
-----------------------	----

I. DISCUSSION OF FORMAT

This comparison of US/USSR anthropometric dimensions uses illustrations and table formats from the US Army Human Engineering Design Data Digest. US Army figures and tables are shown on the left page and USSR tables are shown on the right page with separate tables for men and women. Each table provides 5th and 95th percentile values in centimeters of Armenian, Russian, and Lithuanian populations.

This comparison includes five sets of dimensions: Standing Body Dimensions, Seated Body Dimensions, Circumferences and Surface Dimensions, Head and Face Dimensions, and Anthropometric Data for Workspaces.

II. DIFFERENCES IN MEASUREMENTS

Detail of some measurements varies between the two countries. USSR illustrations often show the skeletal measurement reference points while US illustrations do not. Each country offers more or less detail on specific anthropometric measures.

STANDING BODY DIMENSIONS (Page 5, Figure 1)

While the US illustration shows a measure for KNEECAP HEIGHT, the USSR measurement is shown from the floor to the TIBIALE MEDIALE, or top of the tibia. The USSR Anthropometric Atlas states that the groove in the knee joint can serve as an orientation. If the groove is not found, the subject is asked to flex and extend his leg at the knee joint.

FUNCTIONAL REACH differs between the US and USSR in that the USSR measurement is for ANTERIOR REACH. The fingers are extended, rather than touching the thumb, as shown in the illustration for the US.

SEATED DIMENSIONS (Page 7, Figure 2)

The measure designated as MID-SHOULDER HEIGHT for the US is referred to as SITTING HEIGHT, SHOULDER in the USSR.

The measure designated as SHOULDER HEIGHT, sitting for the US is referred to as the vertical distance from the seat to the Acromion in the USSR.

The US FUNCTIONAL LEG LENGTH is shown with the leg extended diagonally down and forward. The USSR measurement is called LENGTH OF FORWARD EXTENDED LEG, and is shown from the hips (backrest) to the plantar surface of the foot when the leg is extended horizontally forward.

HEAD AND FACE DIMENSIONS (Page 11 to 16, Figure 4 and 5)

The USSR provides three measurements: HEAD CIRCUMFERENCE, HEAD LENGTH, and HEAD BREADTH; while the US features 25 measurements for the head and face.

ANTHROPOMETRIC DATA FOR WORKSPACES (Page 19 to 22, Figure 6 and 7)

The US illustration for OVERHEAD REACH, ONE ARM, shows the figure grasping a bar with the measurement taken from the floor to a point at the base of the fingers. The USSR measurement, titled VERTICAL REACH OF THE ARM, is the vertical distance from the floor to Dactylion III of the hand stretched vertically (i.e. fingers extended). The individual stands erect with his hips or scapulae touching the wall of the stand. During measurement the individual must not stretch his arm with an extra upward movement at the pectoral girdle.

The USSR equivalent for MAXIMUM BODY DEPTH, STANDING, is called MAXIMUM ANTERIPOSTERIOR DIAMETER OF THE BODY. It is defined as the horizontal distance between the vertical planes which pass through the maximum bulging points on the anterior and posterior surfaces of the body. The maximum bulge on the spine of the individual touches the lateral wall of the stand. The maximum bulge anteriorly (on the chest or abdomen) is noted.

The USSR equivalent for MAXIMUM BODY BREADTH, STANDING, is called MAXIMUM TRANSVERSE DIAMETER OF THE BODY. It is the horizontal distance between the maximum projecting points on either side of freely hanging arms. The maximum bulge on the lateral surface of the left arm of the individual touches the lateral wall of the stand and his hips or scapulae touch the central wall. The reading against the maximum bulge on the lateral surface of the right arm is noted.

III. COMMENTS ON THE USSR/US ANTHROPOMETRIC DIMENSIONS COMPARISON

This US/USSR anthropometric dimensions comparison is based upon data from the USSR Anthropometric Atlas and data from the US Army Human Engineering Design Data Digest.

The USSR Anthropometric Atlas was published in Moscow in 1977, translated from Russian and published in 1985 for the National Bureau of Standards, US Department of Commerce and the National Science Foundation by Amerind Publishing Co., Pvt., Ltd, New Delhi, (1985 Oxonian Press Pvt. Ltd, New Delhi). The translated publication is available from the National Technical Information Service, Springfield, Virginia 22161.

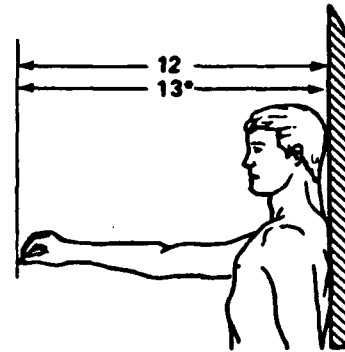
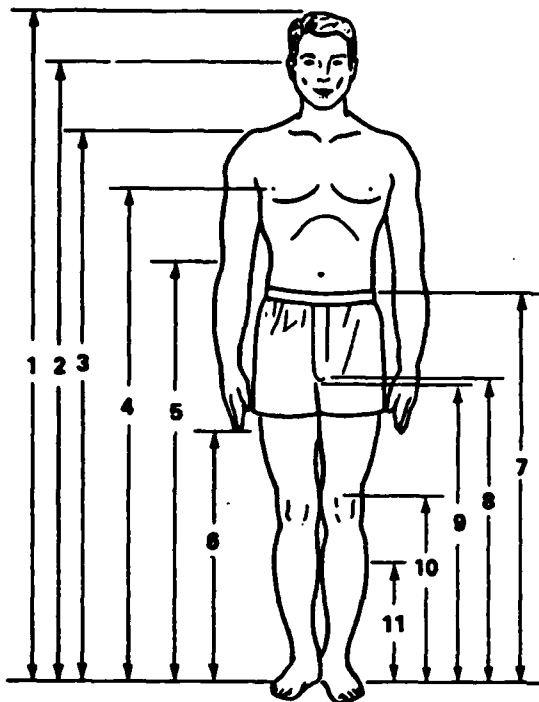
The anthropometric data were collected in the Department of Ergonomics of VNIITE (All-Union Scientific Research Institute for Aesthetic Styling in Engineering) between 1972 and 1975 using methods of measurement approved by the program of cooperation of COMECON countries. The atlas represents the first experimental stage of work utilizing anthropometric data for the population of the USSR in ergonomics and design.

The USSR Anthropometric Atlas compiled data on men and women of three ethnic groups of the European part of the USSR-- Russia, Lithuania and Armenia. The Armenian group consisted of an unspecified number of male and female students 18-21 years old. Data on Russian men were obtained from four groups: 117 students 18-21 years old; 122 Moscow metro operators 22-28 years old; 123 otherwise unspecified 29-35 year olds; and 211 automobile test-drivers 20-45 years old. Data on Russian women were obtained from an unspecified number of students 18-21 years old. Data for the Lithuanian population were obtained from 200 students 18-21 years old.

This comparison presents the data on Armenian, Russian and Lithuanian men and women students, ages 18 to 21 years old, since that population corresponds most closely with the population used for the US Army Human Engineering Design Data Digest. The ages within some groups were not evenly distributed. Both male and female Armenian students had the largest number in the 19-20 age group. Most male students in the Russian group were 20 years old. The Russian women students (number unspecified) were evenly distributed in the 18-21 year old group. The Lithuanian men and women students also had the largest number in the 19-20 age group.

The anthropometric data shown in the US Army Human Engineering Design Data Digest have been compiled and collated from several sources. The data on Ground Troops consist of measurements on a series of 6682 US Army men and a series of 2008 US Marines, both measured in 1966, as well as of 287 US Army men measured in 1977. The data on Aviators represent 1482 US Army aviation personnel, measured in 1970; 1549 US Navy pilots, measured in 1964; and 2420 US Air Force flying personnel, measured in 1967. The data on military women consist of measurements of 1300 US Army WAC personnel and Army nurses, measured in 1977; and 1905 US Air Force WAF personnel and Air Force nurses, measured in 1968.

FIGURE 1. U.S.A. STANDING BODY DIMENSIONS



*SAME AS 12; HOWEVER, RIGHT SHOULDER IS EXTENDED AS FAR FORWARD AS POSSIBLE WHILE KEEPING THE BACK OF THE LEFT SHOULDER FIRMLY AGAINST THE BACK WALL.

	PERCENTILE VALUES IN CENTIMETERS					
	5th PERCENTILE			95th PERCENTILE		
	GROUND TROOPS	AVIATORS	WOMEN	GROUND TROOPS	AVIATORS	WOMEN
WEIGHT (kg)	55.5	60.4	46.4	91.6	96.0	74.5
STANDING BODY DIMENSIONS						
1 STATURE	162.8	164.2	152.4	185.6	187.7	174.1
2 EYE HEIGHT (STANDING)	151.1	152.1	140.9	173.3	175.2	162.2
3 SHOULDER (ACROMIALE) HEIGHT	133.6	133.3	123.0	154.2	154.8	143.7
4 CHEST (NIPPLE) HEIGHT *	117.9	120.8	109.3	136.5	138.5	127.8
5 ELBOW (RADIALE) HEIGHT	101.0	104.8	94.9	117.8	120.0	110.7
6 FINGERTIP (DACTYLION) HEIGHT		61.5			73.2	
7 WAIST HEIGHT	96.6	97.6	93.1	115.2	115.1	110.3
8 CROTCH HEIGHT	76.3	74.7	68.1	91.8	92.0	83.9
9 GLUTEAL FURROW HEIGHT	73.3	74.6	66.4	87.7	88.1	81.0
10 KNEECAP HEIGHT	47.5	46.8	43.8	58.6	57.8	52.5
11 CALF HEIGHT	31.1	30.9	29.0	40.6	39.3	36.6
12 FUNCTIONAL REACH	72.6	73.1	64.0	90.9	87.0	80.4
13 FUNCTIONAL REACH, EXTENDED	84.2	82.3	73.5	101.2	97.3	92.7

*BUSTPOINT HEIGHT FOR WOMEN

USSR STANDING BODY DIMENSIONS

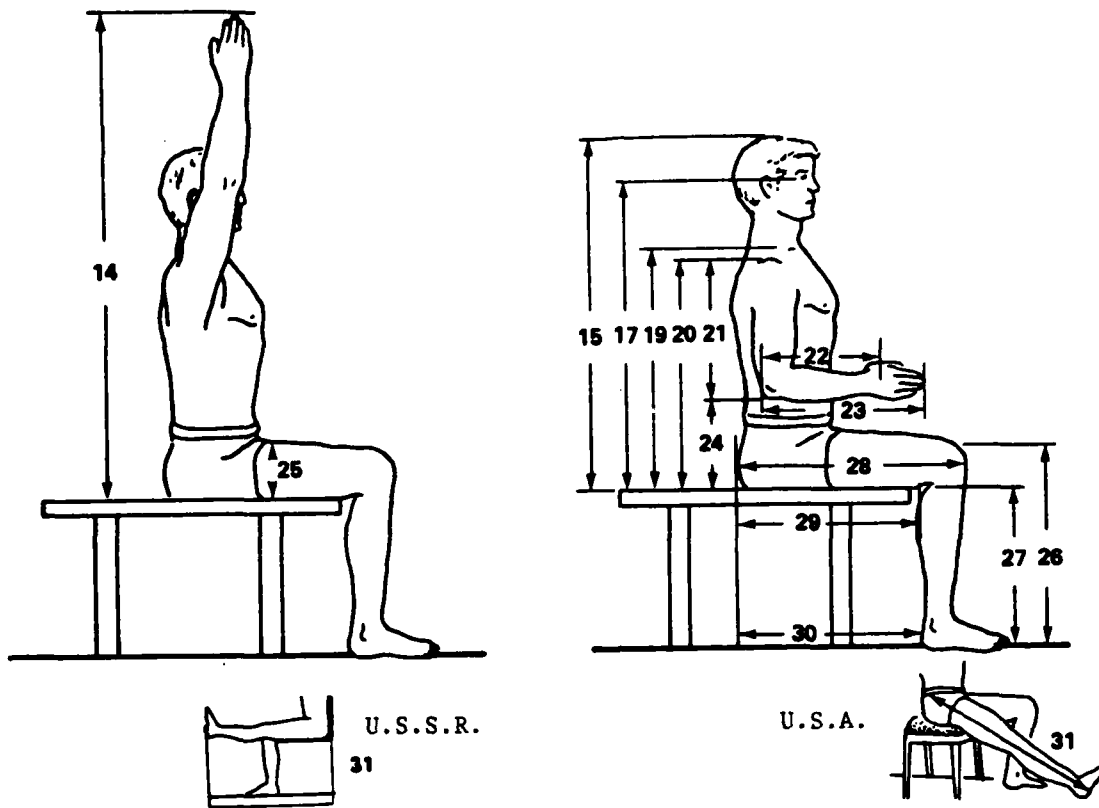
	PERCENTILE VALUES IN CENTIMETERS					
	5th Percentile			95th Percentile		
	ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
WEIGHT (KG)	52.32	59.61	57.36	79.25	83.57	81.91
STANDING BODY DIMENSIONS (MEN)						
1 STATURE	159.32	161.40	167.21	176.06	183.18	186.35
2 EYE HEIGHT (STANDING)	146.73	149.31	154.32	162.82	170.01	173.80
3 SHOULDER (ACROMIALE) HEIGHT	131.25	132.63	137.23	146.96	152.99	155.04
4. CHEST (NIPPLE) HEIGHT	-----	116.41	-----	-----	134.99	-----
5. ELBOW (RADIALE) HEIGHT	-----	99.99	-----	-----	114.61	-----
6 FINGERTIP (DACTYLION) HEIGHT	56.66	58.17	60.97	66.33	69.77	72.31
7 WAIST HEIGHT	97.17	98.86	103.19	109.21	117.58	119.22
8 CROTCH HEIGHT (SYMPHYSION)	-----	80.97	-----	-----	97.33	-----
9 GLUTEAL FURROW HEIGHT	-----	-----	-----	-----	-----	-----
10 TIBIALE MEDIALE**	42.40	40.27	42.90	48.71	49.75	51.29
11 CALF HEIGHT	-----	-----	-----	-----	-----	-----
12 FUNCTIONAL REACH#	78.43	76.73	78.10	90.68	91.73	91.56
13 FUNCTIONAL REACH, EXTENDED	-----	-----	-----	-----	-----	-----

	PERCENTILE VALUES IN CENTIMETERS					
	5th Percentile			95th Percentile		
	ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
WEIGHT (KG)	42.15	49.14	50.38	70.62	78.06	71.80
STANDING BODY DIMENSIONS (WOMEN)						
1 STATURE	147.37	150.84	157.00	163.44	168.04	173.13
2 EYE HEIGHT (STANDING)	135.37	139.39	145.56	151.35	156.23	161.59
3 SHOULDER (ACROMIALE) HEIGHT	120.28	123.66	128.72	135.66	140.28	143.91
4. CHEST (NIPPLE) HEIGHT	-----	-----	-----	-----	-----	-----
5. ELBOW (RADIALE) HEIGHT	-----	92.89	-----	-----	105.99	-----
6 FINGERTIP (DACTYLION) HEIGHT	53.05	54.52	57.93	62.94	64.56	67.99
7 WAIST HEIGHT	88.89	92.10	97.47	102.10	107.14	110.76
8 CROTCH HEIGHT (SYMPHYSION)	-----	75.85	-----	-----	89.11	-----
9 GLUTEAL FURROW HEIGHT	-----	-----	-----	-----	-----	-----
10 TIBIALE MEDIALE**	37.39	36.54	38.97	44.56	44.90	46.51
11 CALF HEIGHT	-----	-----	-----	-----	-----	-----
12 FUNCTIONAL REACH#	70.68	71.17	72.05	81.53	83.07	83.03
13 FUNCTIONAL REACH, EXTENDED	-----	-----	-----	-----	-----	-----

**THE USSR SHOWS A MEASUREMENT FROM THE FLOOR TO THE TIBIALE MEDIALE, OR TOP OF THE TIBIA. THE US SHOWS A MEASUREMENT FROM THE FLOOR TO THE TOP OF THE KNEECAP.

#THE USSR MEASUREMENT IS FOR ANTERIOR REACH. THE FINGERS ARE EXTENDED, RATHER THAN TOUCHING THE THUMB AS SHOWN IN THE ILLUSTRATION FOR THE US MEASUREMENT.

FIGURE 2. U.S.A. SEATED BODY DIMENSIONS



		PERCENTILE VALUES IN CENTIMETERS					
		5th PERCENTILE			95th PERCENTILE		
		GROUND TROOPS	AVIATORS	WOMEN	GROUND TROOPS	AVIATORS	WOMEN
SEATED BODY DIMENSIONS							
14	VERTICAL ARM REACH, SITTING	128.6	134.0	117.4	147.8	153.2	139.4
15	SITTING HEIGHT, ERECT	83.5	85.7	79.0	96.9	98.6	90.9
16	SITTING HEIGHT, RELAXED	81.5	83.6	77.5	94.8	96.5	89.7
17	EYE HEIGHT, SITTING ERECT	72.0	73.6	67.7	84.6	86.1	79.1
18	EYE HEIGHT, SITTING RELAXED	70.0	71.6	66.2	82.5	84.0	77.9
19	MID-SHOULDER HEIGHT	56.6	58.3	53.7	67.7	69.2	62.5
20	SHOULDER HEIGHT, SITTING	54.2	54.6	49.9	65.4	65.9	60.3
21	SHOULDER-ELBOW LENGTH	33.3	33.2	30.8	40.2	39.7	36.6
22	ELBOW-GRIP LENGTH	31.7	32.6	29.6	38.3	37.9	35.4
23	ELBOW-FINGERTIP LENGTH	43.8	44.7	40.0	52.0	51.7	47.5
24	ELBOW REST HEIGHT	17.5	18.7	16.1	28.0	29.5	26.9
25	THIGH CLEARANCE HEIGHT		12.4	10.4		18.8	17.5
26	KNEE HEIGHT, SITTING	49.7	48.9	46.9	60.2	59.9	55.5
27	POPLITEAL HEIGHT	39.7	38.4	38.0	50.0	47.7	45.7
28	BUTTOCK-KNEE LENGTH	54.9	55.9	53.1	65.8	65.5	63.2
29	BUTTOCK-POPLITEAL LENGTH	45.8	44.9	43.4	54.5	54.6	52.6
30	BUTTOCK-HEEL LENGTH		46.7			56.4	
31	FUNCTIONAL LEG LENGTH	110.6	103.9	99.6	127.7	120.4	118.6

USSR SEATED BODY DIMENSIONS

SEATED BODY DIMENSIONS (WOMEN)	PERCENTILE VALUES IN CENTIMETERS					
	5th Percentile			95th Percentile		
	ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
14 VERTICAL ARM REACH, SITTING	-----	-----	-----	-----	-----	-----
15 SITTING HEIGHT, ERECT	78.61	81.16	83.30	87.28	90.02	91.99
16 SITTING HEIGHT, RELAXED	-----	-----	-----	-----	-----	-----
17 EYE HEIGHT, SITTING ERECT	65.88	69.03	71.56	76.01	77.75	79.81
18 EYE HEIGHT, SITTING RELAXED	-----	-----	-----	-----	-----	-----
19 MID-SHOULDER HEIGHT*	51.76	52.48	54.55	59.76	60.68	62.76
20 SHOULDER HEIGHT, SITTING**	-----	51.03	-----	-----	58.99	-----
21 SHOULDER-ELBOW LENGTH	-----	-----	-----	-----	-----	-----
22 ELBOW-GRIP LENGTH	-----	-----	-----	-----	-----	-----
23 ELBOW-FINGERTIP LENGTH	39.76	41.09	41.18	45.37	46.65	46.29
24 ELBOW REST HEIGHT	18.24	18.25	19.28	25.89	26.05	25.73
25 THIGH CLEARANCE HEIGHT	11.54	12.23	12.11	16.56	17.17	16.25
26 KNEE HEIGHT, SITTING	45.21	48.57	48.10	51.78	55.47	54.65
27 POPLITEAL HEIGHT	35.44	38.42	38.42	40.97	44.50	44.13
28 BUTTOCK-KNEE LENGTH	-----	-----	-----	-----	-----	-----
29 BUTTOCK-POPLITEAL LENGTH	43.08	43.84	44.87	50.95	52.42	52.21
30 BUTTOCK-HEEL LENGTH	-----	-----	-----	-----	-----	-----
31 FUNCTIONAL LEG LENGTH***	90.08	-----	94.31	104.50	-----	107.49

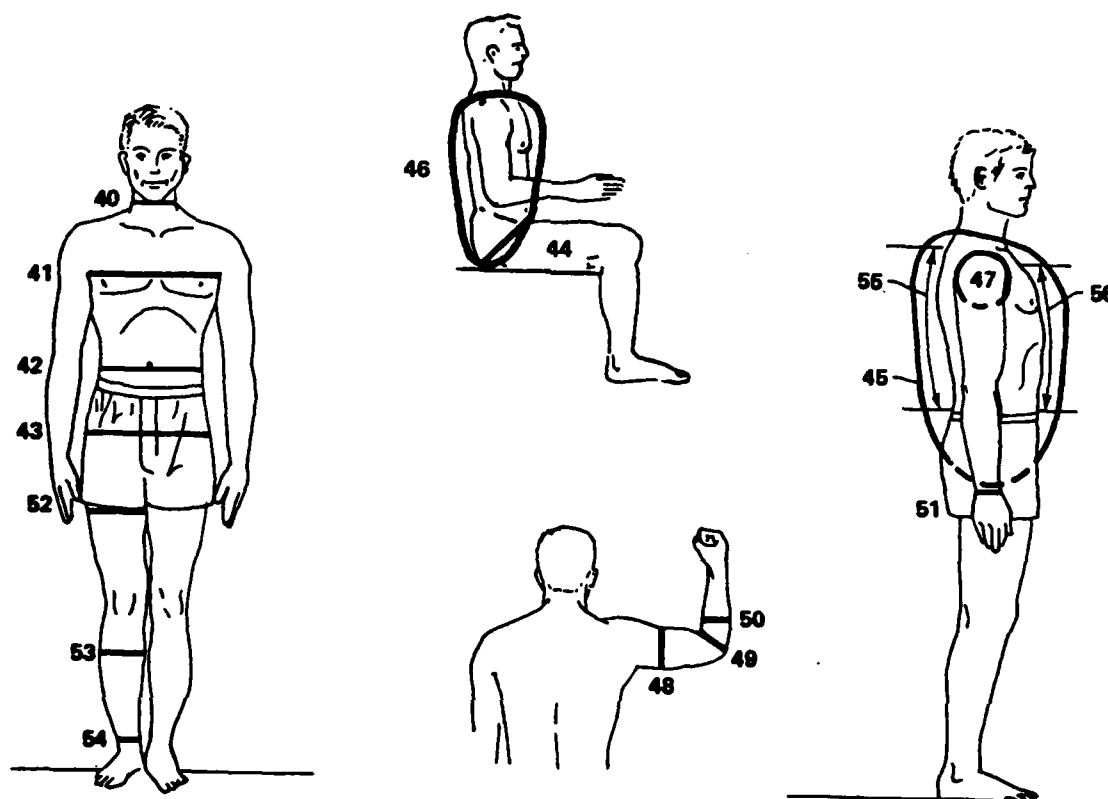
SEATED BODY DIMENSIONS (MEN)	PERCENTILE VALUES IN CENTIMETERS					
	5th Percentile			95th Percentile		
	ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
14 VERTICAL ARM REACH, SITTING	-----	-----	-----	-----	-----	-----
15 SITTING HEIGHT, ERECT	84.06	85.92	87.31	93.13	95.06	96.58
16 SITTING HEIGHT, RELAXED	-----	-----	-----	-----	-----	-----
17 EYE HEIGHT, SITTING ERECT	70.17	73.13	73.96	79.66	81.75	83.82
18 EYE HEIGHT, SITTING RELAXED	-----	-----	-----	-----	-----	-----
19 MID-SHOULDER HEIGHT*	55.61	55.21	56.71	64.33	64.69	65.90
20 SHOULDER HEIGHT, SITTING**	-----	53.82	-----	-----	63.40	-----
21 SHOULDER-ELBOW LENGTH	-----	-----	-----	-----	-----	-----
22 ELBOW-GRIP LENGTH	-----	-----	-----	-----	-----	-----
23 ELBOW-FINGERTIP LENGTH	43.31	43.99	44.23	49.70	52.15	51.03
24 ELBOW REST HEIGHT	18.95	18.73	19.12	25.96	27.11	26.47
25 THIGH CLEARANCE HEIGHT	12.79	12.78	12.08	16.87	17.16	16.09
26 KNEE HEIGHT, SITTING	48.90	51.99	51.70	56.18	60.93	59.59
27 POPLITEAL HEIGHT	39.14	41.52	42.00	45.51	49.36	49.16
28 BUTTOCK-KNEE LENGTH	-----	-----	-----	-----	-----	-----
29 BUTTOCK-POPLITEAL LENGTH	45.06	46.49	48.22	54.36	55.53	56.26
30 BUTTOCK-HEEL LENGTH	-----	-----	-----	-----	-----	-----
31 FUNCTIONAL LEG LENGTH***	95.34	-----	102.11	110.60	-----	118.71

*DESIGNATED AS "SITTING HEIGHT, SHOULDER" IN U.S.S.R. MEASUREMENT

**THE VERTICAL DISTANCE FROM THE SEAT TO THE ACROMION IN U.S.S.R. MEASUREMENT

***THE USSR MEASUREMENT IS CALLED "LENGTH OF FORWARD EXTENDED LEG", AND IS SHOWN FROM THE HIPS (BACKREST) TO THE PLANTAR SURFACE OF THE FOOT WHEN THE LEG IS EXTENDED HORIZONTALLY FORWARD.

FIGURE 3. U.S.A. CIRCUMFERENCES AND SURFACE DIMENSIONS



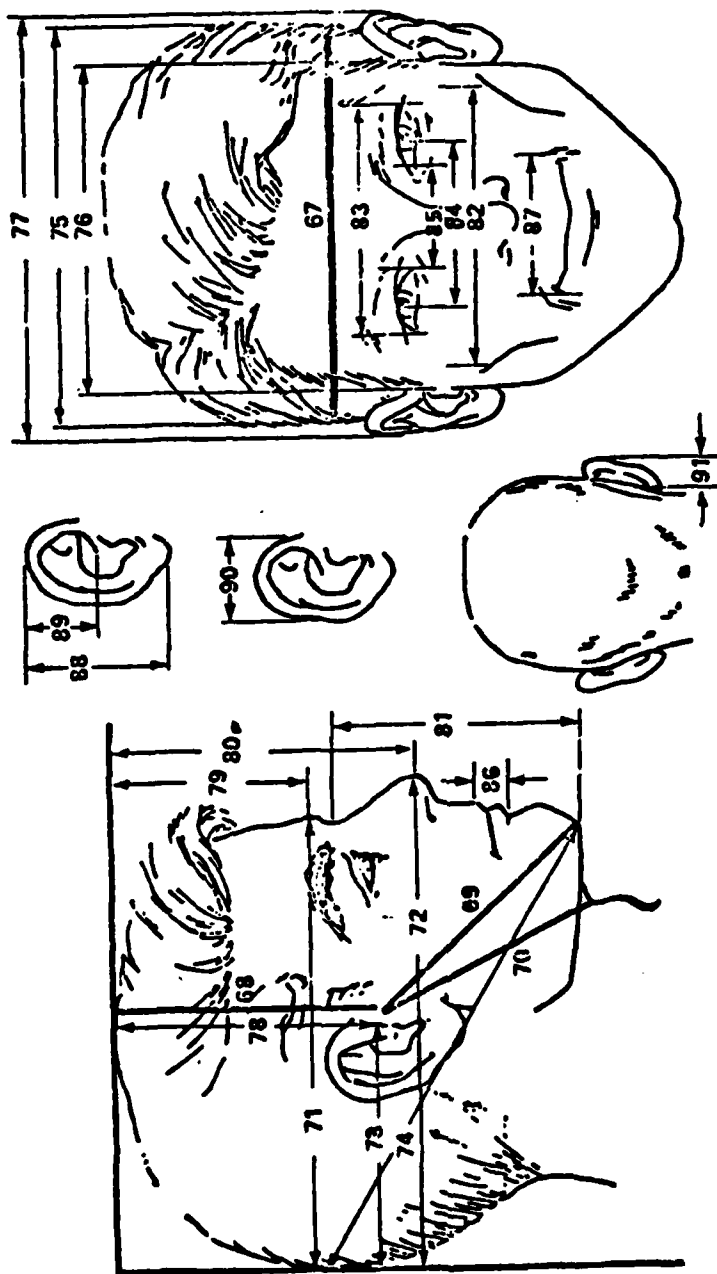
		PERCENTILE VALUES IN CENTIMETERS					
		5th PERCENTILE			95th PERCENTILE		
		GROUND TROOPS	AVIATORS	WOMEN	GROUND TROOPS	AVIATORS	WOMEN
CIRCUMFERENCES							
40	NECK CIRCUMFERENCE	34.2	34.6	29.9	41.0	41.6	36.7
41	CHEST CIRCUMFERENCE*	83.8	87.5	78.4	105.9	109.9	100.2
42	WAIST CIRCUMFERENCE	68.4	73.5	59.5	95.9	101.7	83.5
43	HIP CIRCUMFERENCE	85.1	87.1	85.5	106.9	108.4	106.1
44	HIP CIRCUMFERENCE, SITTING		97.0	87.7		119.3	110.8
45	VERTICAL TRUNK CIRCUMFERENCE, STANDING	150.6	156.3	142.2	178.6	181.9	166.3
46	VERTICAL TRUNK CIRCUMFERENCE, SITTING		150.4	134.8		175.0	161.0
47	ARM SCYE CIRCUMFERENCE	39.6	39.9	33.6	50.3	53.0	41.7
48	BICEPS CIRCUMFERENCE, FLEXED	27.0	27.8	23.2	37.0	36.9	30.8
49	ELBOW CIRCUMFERENCE, FLEXED		28.5	23.5		34.2	30.0
50	FOREARM CIRCUMFERENCE, FLEXED	26.1	26.3	22.2	33.1	33.1	27.5
51	WRIST CIRCUMFERENCE	15.7	15.3	13.8	18.6	19.2	16.2
52	UPPER THIGH CIRCUMFERENCE	48.1	49.6	48.7	63.9	66.9	64.5
53	CALF CIRCUMFERENCE	31.6	33.3	30.6	41.2	41.3	39.2
54	ANKLE CIRCUMFERENCE	19.3	20.0	18.7	25.2	24.8	23.3
55	WAIST BACK LENGTH	39.2	42.4	36.7	50.8	50.9	45.4
56	WAIST FRONT LENGTH	36.1	35.7	30.5	46.2	44.2	41.4

USSR CIRCUMFERENCES AND SURFACE DIMENSIONS

CIRCUMFERENCES (WOMEN)	PERCENTILE VALUES IN CENTIMETERS					
	5th Percentile			95th Percentile		
	ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
40 NECK CIRCUMFERENCE	29.91	28.19	30.02	35.87	34.07	34.77
41 CHEST CIRCUMFERENCE	76.69	74.80	79.22	95.61	92.04	94.59
42 WAIST CIRCUMFERENCE	62.66	57.12	61.45	86.24	78.14	77.47
43 HIP CIRCUMFERENCE	87.67	84.46	89.76	110.53	105.82	105.98
44 HIP CIRCUMFERENCE, SITTING	-----	-----	-----	-----	-----	-----
45 VERTICAL TRUNK CIRCUMFERENCE, STANDING	-----	-----	-----	-----	-----	-----
46 VERTICAL TRUNK CIRCUMFERENCE, SITTING	-----	-----	-----	-----	-----	-----
47 ARM SCYE CIRCUMFERENCE	-----	-----	-----	-----	-----	-----
48 BICEPS CIRCUMFERENCE, FLEXED	-----	-----	-----	-----	-----	-----
49 ELBOW CIRCUMFERENCE, FLEXED	-----	-----	-----	-----	-----	-----
50 FOREARM CIRCUMFERENCE, FLEXED	-----	-----	-----	-----	-----	-----
51 WRIST CIRCUMFERENCE	-----	-----	-----	-----	-----	-----
52 UPPER THIGH CIRCUMFERENCE	46.47	47.44	51.89	63.22	67.74	64.85
53 CALF CIRCUMFERENCE	29.68	30.46	32.18	38.31	39.18	39.39
54 ANKLE CIRCUMFERENCE	-----	-----	-----	-----	-----	-----
55 WAIST BACK LENGTH	-----	-----	-----	-----	-----	-----
56 WAIST FRONT LENGTH	-----	-----	-----	-----	-----	-----

CIRCUMFERENCES (MEN)	PERCENTILE VALUES IN CENTIMETERS					
	5th Percentile			95th Percentile		
	ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
40 NECK CIRCUMFERENCE	34.46	33.57	33.81	40.15	39.33	39.73
41 CHEST CIRCUMFERENCE	83.07	82.23	84.87	101.46	98.81	100.90
42 WAIST CIRCUMFERENCE	69.36	66.96	68.54	88.11	85.32	85.07
43 HIP CIRCUMFERENCE	86.03	85.36	88.69	101.66	103.72	103.00
44 HIP CIRCUMFERENCE, SITTING	-----	-----	-----	-----	-----	-----
45 VERTICAL TRUNK CIRCUMFERENCE, STANDING	-----	-----	-----	-----	-----	-----
46 VERTICAL TRUNK CIRCUMFERENCE, SITTING	-----	-----	-----	-----	-----	-----
47 ARM SCYE CIRCUMFERENCE	-----	-----	-----	-----	-----	-----
48 BICEPS CIRCUMFERENCE, FLEXED	-----	-----	-----	-----	-----	-----
49 ELBOW CIRCUMFERENCE, FLEXED	-----	-----	-----	-----	-----	-----
50 FOREARM CIRCUMFERENCE, FLEXED	-----	-----	-----	-----	-----	-----
51 WRIST CIRCUMFERENCE	-----	-----	-----	-----	-----	-----
52 UPPER THIGH CIRCUMFERENCE	46.61	46.94	49.16	59.91	60.30	60.71
53 CALF CIRCUMFERENCE	31.84	32.40	33.88	38.94	39.94	40.78
54 ANKLE CIRCUMFERENCE	-----	-----	-----	-----	-----	-----
55 WAIST BACK LENGTH	-----	-----	-----	-----	-----	-----
56 WAIST FRONT LENGTH	-----	-----	-----	-----	-----	-----

FIGURE 4. U.S.A. HEAD AND FACE DIMENSIONS

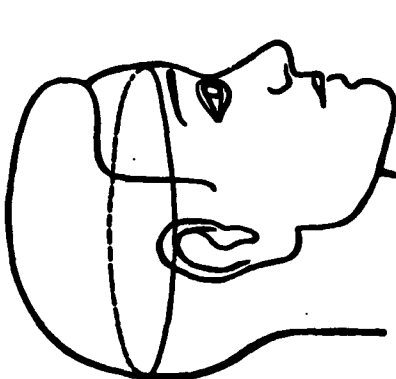


HEAD AND FACE DIMENSIONS

U.S.S.R. HEAD AND FACE DIMENSIONS

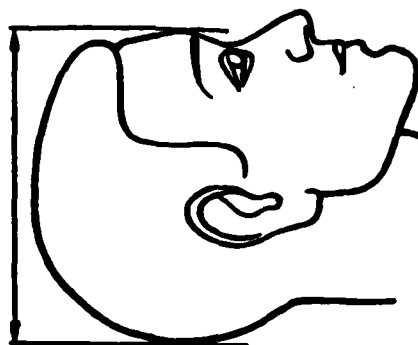
67 HEAD CIRCUMFERENCE

Head girth. The tape is placed at the opisthocranion and supraorbital arches.



71 HEAD LENGTH

Longitudinal diameter of the head (glabella, gl-opisthocranion, op)—the maximum length of the head. Measured from the glabella to opisthocranion. One end of the small calipers is placed on the glabella and the other at the maximum posterior bulge on the mid-sagittal line of the occipital region.



75 HEAD BREADTH

Transverse diameter of the head (eurion, eu-eurion, eu)—the maximum width of the head. Measured at the eurion on either side. The small calipers are held horizontally; by zig-zag movements they are fixed at the point where the head is broadest. For confirmation repeated measurement of the maximum dimensions is recommended.

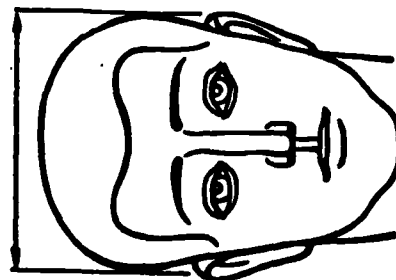


FIGURE 5. U.S.S.R. HEAD AND FACE DIMENSIONS

U.S.A. HEAD AND FACE DIMENSIONS

	PERCENTILE VALUES IN CENTIMETERS					
	5th PERCENTILE			95th PERCENTILE		
	GROUND TROOPS	AVIATORS	WOMEN	GROUND TROOPS	AVIATORS	WOMEN
HEAD AND FACE DIMENSIONS						
67 HEAD CIRCUMFERENCE	53.2	53.8	52.2	58.8	59.9	57.7
68 BITRAGION-CORONAL CURVATURE	31.9	33.4	31.3	36.1	37.8	36.3
69 BITRAGION-MENTON CURVATURE	29.0	30.1	27.3	33.1	34.7	31.6
70 BITRAGION- SUBMANDIBULAR CURVATURE	26.7	28.4	24.5	30.7	33.6	28.9
71 HEAD LENGTH	18.2	18.6	17.3	20.7	21.0	19.8
72 PRONASALE TO WALL	20.8	21.4	19.7	23.5	24.1	23.2
73 TRAGION TO WALL	8.5	9.2	8.8	12.6	12.1	11.8
74 HEAD DIAGONAL (MENTON-OCCIPUT)		24.4			26.9	
75 HEAD BREADTH	14.2	14.4	13.5	16.3	16.5	15.6
76 BITRAGION BREADTH	12.5	13.1	12.1	14.5	15.2	13.8
77 BIAURICULAR BREADTH	16.5	17.5	14.2	19.4	20.2	17.4
78 HEAD HEIGHT (TRAG.-TOP OF HEAD)	11.9	12.0	11.6	14.5	14.4	14.3
79 GLABELLA TO TOP OF HEAD	6.5	7.2	7.1	9.4	10.9	9.9
80 PRONASALE TO TOP OF HEAD	11.6	13.0	11.9	15.1	16.6	16.8
81 FACE LENGTH (MENTON-SELLION)	10.6	10.2	9.6	13.1	13.0	11.8
82 FACE (BIZYGOMATIC) BREADTH	12.8	12.4	11.9	14.9	15.1	14.0
83 BIOCLAR BREADTH	9.3	8.4	8.8	10.9	10.1	10.5
84 INTERPUPILLARY BREADTH	5.1	5.3	5.1	6.8	7.0	6.5
85 INTEROCULAR BREADTH		2.7	2.7		3.8	3.7
86 LIP TO LIP LENGTH		1.1			2.3	
87 LIP-LENGTH (MOUTH BREADTH)		4.5	3.7		5.9	5.1
88 EAR LENGTH	5.5	5.9	4.5	6.9	7.3	6.0
89 EAR LENGTH ABOVE TRAGION		2.5			3.4	
90 EAR BREADTH	3.8	3.0	2.4	5.0	4.3	3.5
91 EAR PROTRUSION		1.6			2.8	

USSR HEAD AND FACE DIMENSIONS

HEAD AND FACE DIMENSIONS (WOMEN)	PERCENTILE VALUES IN CENTIMETERS					
	5th Percentile			95th Percentile		
	ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
67 HEAD CIRCUMFERENCE	54.62	54.92	55.10	59.22	59.42	60.12
68 BITRAGION-CORONAL CURVATURE	-----	-----	-----	-----	-----	-----
69 BITRAGION-MENTON CURVATURE	-----	-----	-----	-----	-----	-----
70 BITRAGION: SUBMANDIBULAR CURVATURE	-----	-----	-----	-----	-----	-----
71 HEAD LENGTH	17.34	18.15	17.91	19.41	19.86	20.02
72 PRONASALE TO WALL	-----	-----	-----	-----	-----	-----
73 TRAGION TO WALL	-----	-----	-----	-----	-----	-----
74 HEAD DIAGONAL (MENTON-OCCIPUT)	-----	-----	-----	-----	-----	-----
75 HEAD BREADTH	14.83	14.94	14.91	16.48	16.35	16.46
76 BITRAGION BREADTH	-----	-----	-----	-----	-----	-----
77 BIAURICULAR BREADTH	-----	-----	-----	-----	-----	-----
78 HEAD HEIGHT (TRAG.-TOP OF HEAD)	-----	-----	-----	-----	-----	-----
79 GLABELLA TO TOP OF HEAD	-----	-----	-----	-----	-----	-----
80 PRONASALE TO TOP OF HEAD	-----	-----	-----	-----	-----	-----
81 FACE LENGTH (MENTON-SELLION)	-----	-----	-----	-----	-----	-----
82 FACE (BIZYGOMATIC BREADTH)	-----	-----	-----	-----	-----	-----
83 BIOCLAR BREADTH	-----	-----	-----	-----	-----	-----
84 INTERPUPILLARY BREADTH	-----	-----	-----	-----	-----	-----
85 INTEROCULAR BREADTH	-----	-----	-----	-----	-----	-----
86 LIP TO LIP LENGTH	-----	-----	-----	-----	-----	-----
87 LIP LENGTH (MOUTH BREADTH)	-----	-----	-----	-----	-----	-----
88 EAR LENGTH	-----	-----	-----	-----	-----	-----
89 EAR LENGTH ABOVE TRAGION	-----	-----	-----	-----	-----	-----
90 EAR BREADTH	-----	-----	-----	-----	-----	-----
91 EAR PROTRUSION	-----	-----	-----	-----	-----	-----

(14)

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SEE PAGE 12.

USSR HEAD AND FACE DIMENSIONS

HEAD AND FACE DIMENSIONS (MEN)	PERCENTILE VALUES IN CENTIMETERS					
	5th Percentile			95th Percentile		
	ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
67 HEAD CIRCUMFERENCE	53.26	52.69	53.57	57.55	57.39	57.76
68 BITRAGION-CORONAL CURVATURE	-----	-----	-----	-----	-----	-----
69 BITRAGION-MENTON CURVATURE	-----	-----	-----	-----	-----	-----
70 BITRAGION: SUBMANDIBULAR CURVATURE	-----	-----	-----	-----	-----	-----
71 HEAD LENGTH	16.10	17.04	17.33	18.47	19.15	19.00
72 PRONASALE TO WALL	-----	-----	-----	-----	-----	-----
73 TRAGION TO WALL	-----	-----	-----	-----	-----	-----
74 HEAD DIAGONAL (MENTON-OCCIPUT)	-----	-----	-----	-----	-----	-----
75 HEAD BREADTH	13.48	14.32	14.44	15.71	15.99	16.02
76 BITRAGION BREADTH	-----	-----	-----	-----	-----	-----
77 BIAURICULAR BREADTH	-----	-----	-----	-----	-----	-----
78 HEAD HEIGHT (TRAG.-TOP OF HEAD)	-----	-----	-----	-----	-----	-----
79 GLABELLA TO TOP OF HEAD	-----	-----	-----	-----	-----	-----
80 PRONASALE TO TOP OF HEAD	-----	-----	-----	-----	-----	-----
81 FACE LENGTH (MENTON-SELLION)	-----	-----	-----	-----	-----	-----
82 FACE (BIZYGOMATIC BREADTH)	-----	-----	-----	-----	-----	-----
83 BIOCLAR BREADTH	-----	-----	-----	-----	-----	-----
84 INTERPUPILLARY BREADTH	-----	-----	-----	-----	-----	-----
85 INTEROCULAR BREADTH	-----	-----	-----	-----	-----	-----
86 LIP TO LIP LENGTH	-----	-----	-----	-----	-----	-----
87 LIP LENGTH (MOUTH BREADTH)	-----	-----	-----	-----	-----	-----
88 EAR LENGTH	-----	-----	-----	-----	-----	-----
89 EAR LENGTH ABOVE TRAGION	-----	-----	-----	-----	-----	-----
90 EAR BREADTH	-----	-----	-----	-----	-----	-----
91 EAR PROTRUSION	-----	-----	-----	-----	-----	-----

FIGURE 6. U.S.A. ANTHROPOMETRIC DATA FOR WORKSPACES

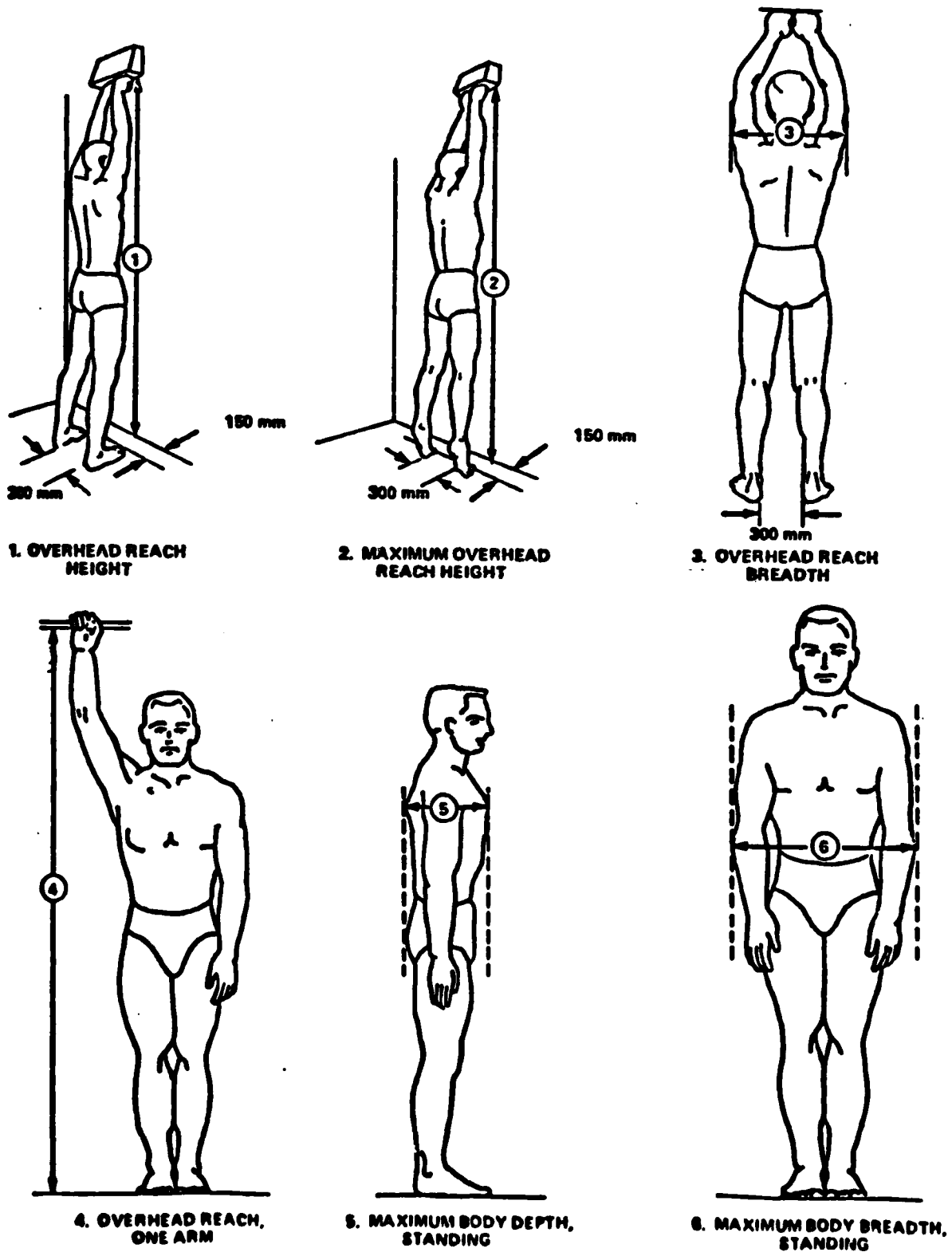
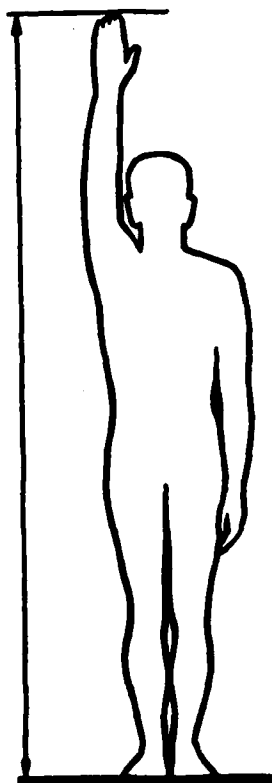


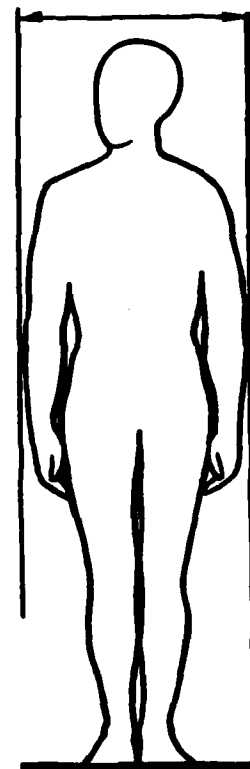
FIGURE 7. U.S.S.R. ANTHROPOMETRIC DATA FOR WORKSPACES



4. VERTICAL REACH
OF THE ARM



5. MAXIMUM ANTEROPOSTERIOR
DIAMETER OF THE BODY



6. MAXIMUM TRANSVERSE DIAMETER
OF THE BODY

U.S.A. ANTHROPOMETRIC DATA FOR WORKSPACES

	5th Percentile		95th Percentile	
	INCHES	CENTIMETERS	INCHES	CENTIMETERS
1. OVERHEAD REACH HEIGHT	-----	-----	-----	-----
2. MAXIMUM OVERHEAD REACH HEIGHT	-----	-----	-----	-----
3. OVERHEAD REACH BREADTH	-----	-----	-----	-----
4. OVERHEAD REACH, ONE ARM	76.8	195.1	88.5	224.8
5. MAXIMUM BODY DEPTH, STANDING	10.1	25.7	13.0	33.0
6. MAXIMUM BODY BREADTH, STANDING	18.8	47.8	22.8	57.9
7. BENT TORSO HEIGHT	-----	-----	-----	-----
8. BENT TORSO BREADTH	-----	-----	-----	-----
9. SQUATTING HEIGHT	40.8	103.6	47.0	119.4
10. MAXIMUM SQUATTING BREADTH	18.8	47.8	25.7	65.3
11. TORSO-TO-KNEE DEPTH, SITTING	12.1	30.7	16.5	41.9
12. HAND-TO-HAND BREADTH, SITTING	13.3	33.8	19.6	49.8
13. KNEELING HEIGHT	-----	-----	-----	-----
14. KNEELING LEG LENGTH	-----	-----	-----	-----
15. KNEELING POSITION HEIGHT	29.7	75.4	34.4	87.4
16. KNEELING POSITION LENGTH	37.6	95.5	48.1	122.2
17. CRAWLING POSITION HEIGHT	26.2	66.5	30.5	77.5
18. CRAWLING POSITION LENGTH	49.3	125.2	58.2	147.8
19. PRONE POSITION HEIGHT	12.3	31.2	16.4	41.7
20. PRONE POSITION LENGTH	84.7	215.1	95.8	243.3
21. HORIZONTAL LENGTH	66.0	167.6	73.9	187.7
22. HORIZONTAL LENGTH, KNEES BENT	-----	-----	-----	-----
23. ARM REACH, SUPINE	26.4	67.1	32.2	81.8
24. BENT KNEE HEIGHT, SUPINE	-----	-----	-----	-----

SEE FIGURE 7 FOR ILLUSTRATION OF EACH MEASUREMENT

U.S.S.R. ANTHROPOMETRIC DATA FOR WORKSPACES (WOMEN)

		PERCENTILE VALUES IN CENTIMETERS					
		5th Percentile			95th Percentile		
		ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
1	OVERHEAD REACH HEIGHT	-----	-----	-----	-----	-----	-----
2	MAXIMUM OVERHEAD REACH HEIGHT	-----	-----	-----	-----	-----	-----
3	OVERHEAD REACH BREADTH	-----	-----	-----	-----	-----	-----
4	OVERHEAD REACH, ONE ARM*	184.73	-----	197.88	208.59	-----	220.47
5	MAXIMUM BODY DEPTH, STANDING	21.86	22.53	20.35	28.44	29.41	26.23
6	MAXIMUM BODY BREADTH, STANDING	40.75	41.78	42.38	52.14	51.52	50.15
7	BENT TORSO HEIGHT	-----	-----	-----	-----	-----	-----
8	BENT TORSO BREADTH	-----	-----	-----	-----	-----	-----
9	SQUATTING HEIGHT	-----	-----	-----	-----	-----	-----
10	MAXIMUM SQUATTING BREADTH	-----	-----	-----	-----	-----	-----
11	TORSO-TO-KNEE DEPTH, SITTING	-----	-----	-----	-----	-----	-----
12	HAND-TO-HAND BREADTH, SITTING	-----	-----	-----	-----	-----	-----
13	KNEELING HEIGHT	-----	-----	-----	-----	-----	-----
14	KNEELING LEG LENGTH	-----	-----	-----	-----	-----	-----
15	KNEELING POSITION HEIGHT	-----	-----	-----	-----	-----	-----
16	KNEELING POSITION LENGTH	-----	-----	-----	-----	-----	-----
17	CRAWLING POSITION HEIGHT	-----	-----	-----	-----	-----	-----
18	CRAWLING POSITION LENGTH	-----	-----	-----	-----	-----	-----
19	PRONE POSITION HEIGHT	-----	-----	-----	-----	-----	-----
20	PRONE POSITION LENGTH	-----	-----	-----	-----	-----	-----
21	HORIZONTAL LENGTH	-----	-----	-----	-----	-----	-----
22	HORIZONTAL LENGTH, KNEES BENT	-----	-----	-----	-----	-----	-----
23	ARM REACH, SUPINE	-----	-----	-----	-----	-----	-----
24	BENT KNEE HEIGHT, SUPINE	-----	-----	-----	-----	-----	-----

*THE VERTICAL DISTANCE FROM THE FLOOR TO DACTYLION III OF THE HAND STRETCHED VERTICALLY OVERHEAD (I.E. FINGERS EXTENDED)

SEE FIGURE 8 FOR ILLUSTRATION OF EACH MEASUREMENT

(20)

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SEE PAGE 18

U.S.S.R. ANTHROPOMETRIC DATA FOR WORKSPACES (MEN)

		PERCENTILE VALUES IN CENTIMETERS					
		5th Percentile			95th Percentile		
		ARMENIAN	RUSSIAN	LITHUANIAN	ARMENIAN	RUSSIAN	LITHUANIAN
1	OVERHEAD REACH HEIGHT	-----	-----	-----	-----	-----	-----
2	MAXIMUM OVERHEAD REACH HEIGHT	-----	-----	-----	-----	-----	-----
3	OVERHEAD REACH BREADTH	-----	-----	-----	-----	-----	-----
4	OVERHEAD REACH, ONE ARM*	203.44	-----	212.31	228.21	-----	239.56
5	MAXIMUM BODY DEPTH, STANDING	22.38	22.40	20.21	28.43	28.72	26.32
6	MAXIMUM BODY BREADTH, STANDING	43.82	44.85	44.64	52.92	54.25	52.47
7	BENT TORSO HEIGHT	-----	-----	-----	-----	-----	-----
8	BENT TORSO BREADTH	-----	-----	-----	-----	-----	-----
9	SQUATTING HEIGHT	-----	-----	-----	-----	-----	-----
10	MAXIMUM SQUATTING BREADTH	-----	-----	-----	-----	-----	-----
11	TORSO-TO-KNEE DEPTH, SITTING	-----	-----	-----	-----	-----	-----
12	HAND-TO-HAND BREADTH, SITTING	-----	-----	-----	-----	-----	-----
13	KNEELING HEIGHT	-----	-----	-----	-----	-----	-----
14	KNEELING LEG LENGTH	-----	-----	-----	-----	-----	-----
15	KNEELING POSITION HEIGHT	-----	-----	-----	-----	-----	-----
16	KNEELING POSITION LENGTH	-----	-----	-----	-----	-----	-----
17	CRAWLING POSITION HEIGHT	-----	-----	-----	-----	-----	-----
18	CRAWLING POSITION LENGTH	-----	-----	-----	-----	-----	-----
19	PRONE POSITION HEIGHT	-----	-----	-----	-----	-----	-----
20	PRONE POSITION LENGTH	-----	-----	-----	-----	-----	-----
21	HORIZONTAL LENGTH	-----	-----	-----	-----	-----	-----
22	HORIZONTAL LENGTH, KNEES BENT	-----	-----	-----	-----	-----	-----
23	ARM REACH, SUPINE	-----	-----	-----	-----	-----	-----
24	BENT KNEE HEIGHT, SUPINE	-----	-----	-----	-----	-----	-----

*THE VERTICAL DISTANCE FROM THE FLOOR TO DACTYLION III OF THE HAND STRETCHED VERTICALLY OVERHEAD (I.E. FINGERS EXTENDED)

SEE FIGURE 8 FOR ILLUSTRATION OF EACH MEASUREMENT

(22)

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US/USSR CROSS-REFERENCE TABLE

This cross-reference table provides information on the page location of data from publications used for the US/USSR anthropometric dimensions comparison.

STANDING BODY DIMENSIONS

MEASURE	USSR ANTHROPOMETRIC ATLAS	US ARMY HUMAN ENGINEERING DESIGN DATA DIGEST
WEIGHT	P 124	P 62
1 STATURE	P 23	"
2 EYE HEIGHT (STANDING	P 24	"
3 SHOULDER (ACROMIALE) HEIGHT	P 29	"
4 CHEST (NIPPLE) HEIGHT	P 37	"
5 ELBOW (RADIALE) HEIGHT	P 31	"
6 FINGERTIP (DACTYLION) HEIGHT	P 34	"
7 WAIST HEIGHT	P 47	"
8 CROTCH HEIGHT	P 41	"
10 KNEECAP HEIGHT	P 42	"
12 FUNCTIONAL REACH	P 85	"

SEATED BODY DIMENSIONS

MEASURE	USSR ANTHROPOMETRIC ATLAS	US ARMY HANDBOOK
15 SITTING HEIGHT, ERECT	P 96	P 63
17 EYE HEIGHT, SITTING ERECT	P 97	"
19 MID-SHOULDER HEIGHT	P 102	"
20 SHOULDER HEIGHT, SITTING	P 103	"

SEATED BODY DIMENSIONS (continued)

MEASURE	USSR ANTHROPOMETRIC ATLAS	US ARMY HANDBOOK
23 ELBOW-FINGERTIP LENGTH	P 113	P 63
24 ELBOW REST HEIGHT	P 104	"
25 THIGH CLEARANCE HEIGHT	P 106	"
26 KNEE HEIGHT, SITTING	P 111	"
27 POPLITEAL HEIGHT	P 112	"
29 BUTTOCK-POPLITEAL LENGTH	P 116	"
31 FUNCTIONAL LEG LENGTH	P 119	"

CIRCUMFERENCES

MEASURE	USSR ANTHROPOMETRIC ATLAS	US ARMY HANDBOOK
40 NECK CIRCUMFERENCE	P 68	P 66
41 CHEST CIRCUMFERENCE	P 69	"
42 WAIST CIRCUMFERENCE	P 70	"
43 HIP CIRCUMFERENCE	P 71	"
52 UPPER THIGH CIRCUMFERENCE	P 74	P 67
53 CALF CIRCUMFERENCE	P 75	"

HEAD AND FACE DIMENSIONS

MEASURE	USSR ANTHROPOMETRIC ATLAS	US ARMY HANDBOOK
67 HEAD CIRCUMFERENCE	P 90	P 69
71 HEAD LENGTH	P 88	"
75 HEAD BREADTH	P 89	"

ANTHROPOMETRIC DATA FOR WORKSPACES

MEASURE	USSR ANTHROPOMETRIC ATLAS	US ARMY HANDBOOK
4 OVERHEAD REACH, ONE ARM	P 87	P 82
5 MAXIMUM BODY DEPTH, STANDING	P 84	"
6 MAXIMUM BODY BREADTH, STANDING	P 83	"

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